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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/675,944

10/02/2003

Doron Shaked

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INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

SMITH, JEFFREY S

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

09/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/675,944	Applicant(s) SHAKED, DORON	
	Examiner Jeffrey S. Smith	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 22 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14-20, 22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22 is/are allowed.
- 6) ☒ Claim(s) 1-3, 14, 15 and 23 is/are rejected.
- 7) ☒ Claim(s) 4-12, 16-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Requirement for Information

Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

In response to this requirement, please provide answers to each of the following interrogatories eliciting factual information that is known by the applicant and the assignee of this application:

1. Please state the application number of every application that claims the benefit of or priority to either U.S. Application Number 10/675,944 or PCT/US2004/032295 or both. For example, if any patent application filed in Europe claims the benefit of or priority to either U.S. Application Number 10/675,944 or PCT/US2004/032295 or both, please identify the application number of each such application filed in Europe. Also, if any applications have been filed in any other countries that claim the benefit of or priority to either U.S. Application Number 10/675,944 or PCT/US2004/032295 or both then state the application number of each such application.
2. Has any application that claims the benefit of or priority to either U.S. Application Number 10/675,944 or PCT/US2004/032295 or both ever received an Office action or an examination report from a Patent Office? Please respond by answering "yes" if any such application has received an Office action or an examination report from a Patent Office or by answering "no" if no such application has received an Office action or an examination report from a Patent Office.

3. If the answer to 2 is "yes" then submit each Office action and each examination report.
4. Has any claim from any application that claims the benefit of or priority to either U.S. Application Number 10/675,944 or PCT/US2004/032295 or both, ever been rejected by a Patent Office? Please respond by answering "yes" if any claim from any such application has been rejected by a Patent Office or by answering "no" if none of the claims from any such application have been rejected by a Patent Office.
5. If the answer to 4 is "yes" then submit a copy of each rejection and identify each rejected claim.
6. Have any claims from any application that claims the benefit of or priority to either U.S. Application Number 10/675,944 or PCT/US2004/032295 or both, been allowed by a Patent Office? Please respond by answering "yes" if any claims from any such application have been allowed by a Patent Office or by answering "no" if no claims from any such application have been allowed by a Patent Office. If the answer to this question is "yes," please identify the allowed claims.

This information is material to patentability. Applicant is reminded that failure to fully reply to this requirement for information will result in a holding of abandonment. This requirement is an attachment of the enclosed Office action. A complete reply to the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method steps of claims 14-20 and 22 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 14-15, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Publication No. WO 02/089062 by Kimmel et al. ("Kimmel") in view of admitted prior art and further in view of U.S. Patent Application Publication Number 2004/0091164 by Sakatani et al. ("Sakatani").

For claim 1, Kimmel discloses "a non-linear illumination estimation module that receives the sub-sampled images and produces corresponding interim illumination estimations." (See page 3).

Kimmel does not explicitly disclose a down-sampling module, an up-sampling module, and an illumination manipulation module.

Figure 2 of the admitted prior art discloses a down-sampling module, an up-sampling module and an illumination manipulation module. (See page 2 of the specification, in a "prior art Retinex-type algorithm, the illumination L is obtained from a sub-sampled version of the input image"). Figure 2 also shows an up-sampling module. (See page 3, "an up-sample module 34" produces "an estimation of the illumination ... using interpolation") and an illumination manipulation module 180.

It would have been obvious to one of ordinary skill in the art at the time of invention to use the down-sampling, up-sampling and illumination manipulation modules

Art Unit: 2624

of the admitted prior art with the non-linear retinex algorithm of Kimmel in order to speed up the computationally intensive retinex process, as taught in the admitted prior art on page 3 of the specification.

Sakatani discloses "the resolution of the blurred image produced by the formula (7) is changed to match with the resolution of the original image $I_j(x, y)$ by interpolation" (see paragraph 118). The admitted prior art further discloses "using the high resolution input image S to select corresponding output pixels" when "the interpolation is performed on a set of smooth, low resolution intermediate images" (see page 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have an upsampling module that uses the input image as a guide in the interpolation for the benefit of performing Retinex type processing as taught by both the admitted prior art and Sakatani.

For claim 2, the admitted prior art discloses that the up-sampling module is configured to implement an interpolation routine. (See page 3 of the specification).

For claim 14 Kimmel discloses producing one or more low resolution input images by sub-sampling the high resolution input image, generating an interim illumination estimation for each of the one or more low input resolution images, and producing a Retinex corrected output.

The admitted prior art discloses producing one or more low resolution input images (32), generating an interim illumination estimation (30), generating an illumination estimation suitable for Retinex type correction by up-sampling (34) and combining the input image and the interim illumination estimation (20).

Sakatani discloses "the resolution of the blurred image produced by the formula (7) is changed to match with the resolution of the original image $I_j(x, y)$ by interpolation" (see paragraph 118). The admitted prior art further discloses "using the high resolution input image S to select corresponding output pixels" when "the interpolation is performed on a set of smooth, low resolution intermediate images" (see page 3). The admitted prior art also discloses generating the illumination estimation by combining the input image and the interim illumination estimation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to generate the illumination estimation by combining the input image and the interim illumination estimations for the benefit of performing Retinex type processing as taught by both the admitted prior art and Sakatani.

For claims 3 and 15, Kimmel discloses an illumination estimation that comprises local maximum routine. (See Kimmel at page 3).

For claim 23, the admitted prior art discloses an illumination manipulation module wherein the input image and the illumination estimation are combined.

Allowable Subject Matter

Claim 22 is allowed.

Claims 4-12 and 16-20 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

The art of record does not disclose "a difference interpolation algorithm...receiving the difference of the sub-sampled images and the interim

illumination estimations, and a sampling rate and producing the interpolated difference; and an adder that adds the interpolated difference and the input image" as recited in claim 4. Similarly, claims 5-13 and 16-22 each contain a combination of a difference interpolation algorithm and an illumination interpolation algorithm which is not disclosed in the art of record.

Response to Arguments

Applicant's arguments with respect to claims 1-3, 14-15, and 23 have been considered but are moot in view of the new ground(s) of rejection.

Applicants argue that they satisfied the duty of disclosure and therefore did not address whether any rejections have been made in any related foreign filed or domestic applications. The requirement for information under 37 C.F.R. 1.105 is separate from the duty of disclosure and therefore the applicants and the assignee of this application are required to comply with the requirement for information regardless of whether the duty of disclosure is satisfied. In order to aid applicants in complying with the requirement for information, the requirement has been restated as a series of specific instructions which can be answered with "yes" or "no" responses or by submitting specific information known to the applicants and the assignee of this application.

Applicants argue that the specification describes the method steps of claims 14-20 and 22 and therefore the objection to the drawings should be withdrawn. The requirement under 37 C.F.R. 1.83(a) that the drawings must show every feature specified in the claims is not met by arguing that pages 5-10 of the specification discuss

the claim features. This requirement is met by drawings that show every feature of the invention specified in the claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

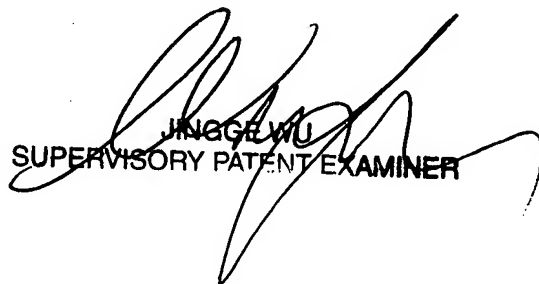
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey S. Smith whose telephone number is 571 270-1235. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSS
August 27, 2007


JINGGE WU
SUPERVISORY PATENT EXAMINER